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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,514	03/22/2004	Wilhelm Frohs	SGL 02/23	3892

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EXAMINER

DESAI, ANISH P

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 08/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

HL

Office Action Summary

Application No.

10/806,514

Applicant(s)

FROHS ET AL.

Examiner

Anish Desai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 9-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>03/22/2004</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-8, drawn to a connecting piece for carbon material, classified in class 428, subclass 408.
- II. Claims 9-18, drawn to a method of producing connecting piece for carbon material electrodes, classified in class 264, subclass 29.1.

The inventions are distinct, each from the other because of the following reasons:

1. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made by following process. For example by forming a mixture containing activated carbon fibers with coating instead of coating the carbon fibers, then adding the coke, shaping the resulting mixture into the desired shape bodies, and carbonizing the resulting bodies.
2. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

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3. During a telephone conversation with Mr. Stermer Werner on 8/11/05 a provisional election was made with traverse to prosecute the invention of Group 1, claims 1-9, drawn to a connecting piece for carbon material. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9-18 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites "...said carbonized coating being a carbonization product of a coating material selected from the group consisting of wax, pitch, natural resins, thermoplastic polymers, and thermosetting polymers." and claim 6 recites "carbonized coating". It is unclear as to what applicant means by "carbonized

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coating being a carbonization product” as claimed in the claim 1 and “carbonized coating” as claimed in the claim 6. Does the applicant means that he/she is carbonizing the coating and then adding the coating to the carbon fibers or the claimed coating is added to the carbon fibers and then the fiber with the coating is carbonized? For the purpose of the prior art search, the examiner is interpreting that the coating is added to the carbon fibers and then carbon fibers with the coating are carbonized.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1,4, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Chuoku (GB 1548046).

7. Chuoku discloses carbon electrodes with a high strength and spalling resistant for electrical furnaces wherein iron, steel and alloys are manufactured (Front page, lines 9-14) and a method of preparing carbon electrodes (Page 2, lines 42-44). The method of making the electrode comprises a mixture containing carbonaceous material such as petroleum coke; polyacrylonitrile based non-fusible carbon fibers that are oxygenated (Page 2, lines 45-51, lines 103-106, 113-121), and a binder such as coal tar pitch (Page

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3, lines 92-93). Additionally, Chuoku discloses that the fibers and binder in the mixture are simultaneously carbonized (Page 4, lines 34-37). The examiner is equating the coal tar pitch binder as the claimed carbonized coating. Note that the said mixture is used in the formation of electrodes thus the carbon fibers are necessarily in the electrodes. The term "carbon electrodes" also means electrode bodies and nipples (Front page, lines 14-17).

8. Regarding claim 4, the length of the fiber discloses by Chuoku is 1-25 mm (Page 2, lines 45-47).

9. Regarding claim 5, Chuoku teaches that the addition of non-fusible fibers is from 0.5 to 5% by weight (Page 3, line 79-80).

10. Regarding claim 7, as stated previously Chuoku discloses polyacrylonitrile based carbon fibers.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chuoku (GB 1548046) in view of *Handbook of Carbon, Graphite, Diamond and Fullerenes – Properties, Processing and Applications* (see, Chapter 8, Table 8.6, Page 191).

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12. The invention of Chuoku is previously disclosed. As stated previously, Chuoku teaches polyacrylonitrile (PAN) based carbon fibers. Although, Chuoku is silent with respect to teaching the claimed modulus, the PAN fibers with the claimed modulus are well known in the art as shown in the *Handbook of Carbon, Graphite, Diamond and Fullerenes – Properties, Processing and Applications* (see, Chapter 8, Table 8.6, Page 191).

13. Thus a skilled artisan would have found it obvious to use the carbon fibers having the claimed modulus in the mixture of Chuoku to form the electrodes that have excellent strength.

14. Regarding claim 6, Chuoku discloses the claimed invention except that the mass fraction of the carbonized coating on the carbon fibers, based on the mass of the carbon fiber is from 0.5 to 15%. Note that the mass fraction of carbonized coating is considered as a result effective variable. As the amount of coating increases, the mass fraction of the coating on the carbon fiber increases which results in a stronger adhesion of the carbon fiber with the matrix. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the claimed mass fraction, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

15. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chuoku (GB 1548046) in view of Lewis et al. (US Patent 5,413,738).

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unitary composite structure having improved flexural strength and a reduced coefficient of thermal expansion comprising combination of carbonaceous reinforcing materials interbonded with pitch (see abstract). Additionally, Lewis et al. teach that their invention is applicable in the field of carbon-carbon composites and is most applicable to graphite electrodes (Column 1, lines 10-15). The fibers used for the carbonaceous reinforcing material may be woven, non-woven or knitted (Column 13, lines 1-5).

17. A skilled artisan would have found it obvious to use the carbon fibers of Lewis et al. in the form of woven, non-woven or knitted and used it in the invention of Chuoku. One would be motivated to do this, in order to obtain a carbon electrode with the improved properties such as flexural strength and reduced coefficient of thermal expansion.

Claim Rejections - 35 USC § 102/103

18. Claim 3 is rejected under 35 U.S.C. 102 (b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Chuoku (GB 1548046).

19. Although Chuoku does not explicitly teach the claimed linear coefficient of thermal expansion of the claimed carbon fibers, it is reasonable to presume that the said linear coefficient of thermal expansion is necessarily present in the invention of Chuoku (GB 1548046). Support for such presumption is found the use of like materials. For example, applicant is using polyacrylonitrile (PAN) based carbon fibers (page 11, Specification) and Chuoku (GB 1548046) also teaches PAN based carbon fibers (Page 2, lines 113-116). The burden is upon the applicant to prove it otherwise. *In re*

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Fitzgerald 205 USPQ 594. In addition, the presently claimed property linear coefficient of thermal expansion would obviously have been present once the invention of Chuoku is provided. Note *In re Best*, 195, USPQ at 433, footnote 4 (CCPA 1977) as to providing of this rejection made above under 35 U.S.C. 102.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anish Desai whose telephone number is 571-272-6467. The examiner can normally be reached on Monday-Friday, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

APD

Elizabeth M. Cole
ELIZABETH M. COLE
PRIMARY EXAMINER